REMARKS

I. INTRODUCTION

Claims 39, 41-50 and 52-72 are currently pending. New claims 61-72 are added. Support for the new claims may be found in the specification, for example, at page 20, line 16 to page 23, line 17. The Examiner has rejected claims 39, 41-50 and 52-60 under 35 U.S.C. § 112, first paragraph, and has rejected claims 39 and 50 under 35 U.S.C. § 102(b). In view of the following representations, allowance of this application is most respectfully requested.

II. REJECTION UNDER 35 U.S.C. § 112, ¶1, ENABLEMENT

Claims 39, 41-50 and 52-60 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement for the reasons of record. As set forth in detail below, Applicants respectfully submit that the claims fully comply with the enablement requirement of section 112 and request that this rejection be withdrawn.

The test for enablement is whether a person skilled in the art could make and use the invention as claimed without undue experimentation. *United States v. Telectronics, Inc.*, 857 F.2d 778, 785, 8 USPQ2d 1217, 1223 (Fed. Cir. 1988) ("The test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation."). The fact that experimentation may be complex does not necessarily make it undue, if the art typically engages in such experimentation. *In re Certain Limited-Charge Cell Culture Microcarriers*, 221 USPQ 1165, 1174 (Int'l Trade Commission 1983), *aff'd. sub nom., Massachusetts Institute of Technology v. A.B. Fortia*, 774 F.2d 1104, 227 USPQ 428 (Fed. Cir. 1985). *See also In re Wands*, 858 F.2d at 737, 8 USPQ2d at 1404. A specification disclosure which contains a teaching of the manner and process of making and using an invention in terms which correspond in scope to those used in describing and defining the subject matter sought

to be patented must be taken as being in compliance with the enablement requirement of 35 U.S.C. §112, first paragraph. MPEP § 2164.01.

The present invention relates to organic light emitting devices having increased efficiency. The increased efficiency stems from the use of a phosphorescent dopant material that has a triplet energy that is less than the triplet energy of the host material, and from "charge-trapping" on the phosphorescent dopant. Applicants provide a description of the criteria for charge trapping on the dopant material. *See* Specification at page 7, lines 1-10; page 7, line 15 – page 8, line 12; and page 12, line 21 – page 13, line 2. Applicants also provide the method for the device fabrication. A person of ordinary skill in the art would be familiar with the techniques used to determine the HOMO, LUMO and triplet energies of a given material, as such measurements are routine in this field. Thus, the determination of the HOMO, LUMO and triplet energy of particular materials would not constitute undue experimentation.

Further to the Interview Summary mailed on December 16, 2008, Applicants herein submit literature references that indicate that a person of ordinary skill in the art would understand that certain modifications of chemical structures may affect the LUMO and HOMO energies. Substituents that increase the degree of conjugation of a conjugated system generally lower the energy of the system. Additionally, such substituents generally decrease the difference (gap) between the HOMO energy and the LUMO energy. *See* Frances A. Carey, Organic Chemistry, McGraw-Hill, Inc. New York, 1987, at page 507. Also, the LUMO energy of a system will generally be lowered by an electron attracting substituent. *See* Francis A. Carry and Richard J. Sundberg, Advanced Organic Chemistry, Part A: Structure and Mechanisms, 2nd edition, Plenium Press, New York 1984 at page 564. The same trends are generally observed for other conjugated systems, including aromatic systems. Thus, Applicants submit that a person of ordinary skill in the art would recognize that

through routine chemical modification of the exemplified phosphorescent dopants and/or host materials, the relative positions of the HOMO and LUMO levels may be adjusted. For example, by chemically modifying the phenylpyridine ligand of the phosphorescent dopant material $Ir(ppy)_3$, the relative energies of the HOMO, LUMO and the energy gap of the dopant material may be changed. For example, the addition of a substituent to the phenylpyridine that extends the conjugation, may be expected to lower the energy gap and the LUMO energy.

In view of the above, Applicants respectfully submit that a person of ordinary skill in the art would be able to make and use the claimed devices without undue experimentation.

III. REJECTION UNDER 35 U.S.C. § 102(b)

Claims 39 and 50 stand rejected under 35 U.S.C. § 102(b) as anticipated by Baldo et al. in *Nature* **1998**, *395*, pp. 151-154. For the reasons set forth below, Applicants respectfully submit that Baldo et al. does not disclose, expressly or inherently, each limitation of the claims 39 or 50.

The Office Action relies on the values reported by Lamansky et al. (U.S. 2002/0182441) for the triplet energy of PtOEP and Alq_3 in an attempt to show that the relative triplet energies of the materials used in the Baldo device inherently meet the requirement of the present claims. The Office Action states that "[i]f under the same conditions, the triplet state energy of the dopant material PtOEP is measured to be 1.9eV, and the triplet energy of the electron transporting host material Alq_3 is measured to be 2.0eV, this combination of materials meets the triplet state energy relationship required by the present independent claims 39 and 50." For the reasons set forth in detail below, Applicants respectfully disagree with this statement in the Office Action.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631; 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The fact that a certain result or characteristic *may* occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534; 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (reversed rejection because inherency was based on what would result due to optimization of conditions, not what was necessarily present in the prior art); *In re Oelrich*, 666 F.2d 578, 581-82, 212; USPQ 323, 326 (CCPA 1981). "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities.'" *In re Robertson*, 169 F.3d 743, 745, 49; USPQ2d 1949, 1950-51 (Fed. Cir. 1999).

Applicants respectfully submit that the values reported by Lamansky et al. (U.S. 2002/0182441), which are referred to in the Office Action, are not 1.9eV and 2.0eV, but rather are 1.9 ± 0.1 eV and 2.0 ± 0.1 eV. Within the experimental error, these reported triplet values can not be distinguished. In fact, considering the experimental error in these reported values, it is possible that the triplet energy of the PtOEP is greater that the triplet energy for the Alq_3. To that end, the triplet energy of PtOEP has been reported to be greater that the triplet energy of Alq_3. The triplet energy (E_T) of PtOEP has been reported as 1.91 eV and the triplet energy of Alq_3 has been reported as 1.90 eV. (*See* Thompson, M.E. et al., "Organometallic Complexes for Optoelectronic Application" in Comprehensive Organometallic Chemistry III, (M. P. Mingos and R. H. Crabtree, eds.), Vol. 12, (2007), page 142).

Thus, Applicants respectfully submit that the combination of Alq_3 and PtOEP does not inherently meet the triplet energy relationship recited in the claims. The claims require that "the phosphorescent dopant material has a triplet excited state with a triplet state energy that is less than the triplet state energy of the lowest triplet excited state of the electron transporting host material." The triplet energy level of PtOEP is not *necessarily* less than the triplet energy level of Alq_3, and may actually be greater that the Alq_3 triplet energy. Thus, Applicants respectfully submit that Baldo et al. do not teach or suggest each limitation of claims 39 or 50, and respectfully request that the rejection be withdrawn.

IV. CONCLUSION

Applicants respectfully submit that the pending claims are in condition for allowance and request that such action be taken. If for any reason the Examiner believes that prosecution of this application would be advanced by contact with the Applicants' attorney, the Examiner is invited to contact the undersigned at the telephone number below.

Respectfully submitted,

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By: _____

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